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# Final report for EEB Hub, Task 10.2, Metrics Development, BP2

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## Final report for EEB Hub, Task 10.2, Metrics Development, BP2

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The long-term EEB Hub goal quantified during BP2 is to accelerate the adoption of advanced energy retrofits to reduce building energy use 20% by 2020 for commercial buildings in the greater Philadelphia region. For each budget period, the EEB Hub develops deliverables targeted at methods and means to achieve this long-term goal. The purpose of metrics is to regularly measure progress towards achieving the annual budget-period deliverables.

In July 2012, the EEB Hub organized a workshop, led by Noah Goldstein and Valerie Patrick, to generate a number of metrics that would describe how the Hub would be progressing towards its long-term goals. That workshop led to a set of 27 “goal related” metrics that can be used to measure progress of activities towards the Hub’s 2020 goals (see “EEB Hub Metrics Session 24Jul2012 FINAL Report V1.docx” for details about the metrics workshop).

Working with Hub Management and DOE, that list was used to create seven Hub-wide deliverables for BP3, along with specific performance metrics for each Task. The Task-level performance metrics are aligned with relevant Hub-level deliverables as well as the overall Hub goal of 20% energy reduction in commercial buildings by 2020. The Task-level performance metrics take the form of quarterly milestones that measure progress towards a defined Task-level deliverable for BP3. The program assessment subtask worked with individual BP3 Task leads to construct preliminary metrics, as seen in appendix A. Those metrics are both numerical and qualitative, and are flexible to account for interim milestones. In BP3, Hub management, the program assessment subtask, and the Task leads will use the developed metrics to track progress towards meeting Task-level deliverables and to ensure continued alignment with overall Hub goals. DOE will also use the metrics to ensure the Hub is on track for the completion of the seven deliverables.

With three exceptions, each of the seven Hub deliverables for BP3 maps to a specific Task. Thus, seven of the ten Tasks effectively have ownership of seeing that a specific Hub-level deliverable is met in BP3. Tasks 1 (Management), Task 3 (Building Energy Informatics), and Task 10 (reporting) do not have explicit Hub-level deliverables, yet metrics were developed for those tasks as well, as a management tool.

In Appendix A, the preliminary metric “tool” is presented. This will be used by Task leads as a starting point to fill in, with their Sub-task participants, to manage the progression of work over the course of BP3.

## APPENDIX A

<b>Task 1</b>		<b>Task-Level Deliverable and Metrics</b>	
<b>Deliverable:</b>	<b>12/28/12</b>		
	<b>1/9/2013</b>	If changed, please insert most recent Task deliverable here: Sound financial and program management principles and practices have been applied to administer/govern the EEB Hub.	
<b>Metrics:</b>	<b>01/09/13</b>		
1.1 Financial	Monthly percent of on-time invoicing by EEB Hub performers compared to the target		Date 1
1.2 Communication	The extent to which meeting norms are developed and implemented in BP3 for each the Operating Committee and Advisory Board		
1.3 Management	The extent to which a RACI is developed and implemented in BP3 for the Operating Committee and Advisory Board		
	1.3.1	RACI matrix completed	date
	1.3.2	RACI matrix followed and evaluated by Task leads	date

**Task 2**  
**Task Level Deliverable and Metrics**  
**Deliverable:**     **12/28/12**   **Beta release of a suite of user-friendly simulation tools that will require no more than 24 hours of input time, interface with existing software, and are capable of predicting energy use in the studied types of commercial buildings with accuracy of +/- 5% at the stage of advanced energy retrofit investment decision making.**  
**NCG: Is the goal 5% or 15%?? Please clarify**  
If changed, please insert most recent Task deliverable here:

<b>Metrics:</b>	<b>12/28/12</b>		Date
			Mode
2.1 Accuracy Definitions	Definition of 15% accuracy and progress towards this objective		
2.1.1	At the SUBTASK or MODEL/SIMULATION TOOL level: A definition of accuracy that is measurable		?
2.1.2	Establishment of procedures to measure that accuracy		?
2.1.3	Achievement of XX% accuracy		?
2.1.4	Achievement of 15% accuracy		?
2.2 Model Development	Definition of 24 hour input requirement and progress towards this objective		Mode
2.2.1	Design framework per MODEL – to measure or estimate input time		?
2.2.2	XX hour entry for each model (e.g. 48 hours)		?
2.2.3	24 hour entry for every model		Ja
2.3 Platforms	Definition of contribution to the simulation platform and progress towards this objective		Mode
2.3.1	Identify of projects in EEB Hub Demonstration projects – at least 2 for each model		?
2.3.2	Number of number of building/rooms/systems models rendered of relevant demonstration project buildings		mont
2.3.3	Approximate number of simulations runs, of relevant demonstration project buildings		mont
2.3.4	Number of stakeholder companies (or owner groups), not in Hub, who are using tools. Through letters, emails, downloads etc.... For each Model		mont

Task 3  
Deliverable: 12/28/12

Task Level Deliverable and Metrics

Demonstrated building energy information storage, retrieval and display prototypes to enable internal and external stakeholders to make more informed decisions related to Advanced Energy Retrofit projects and policies.

If changed, please insert most recent Task deliverable here:

Metrics: 12/28/12

3.1 Matrix Update

Percent complete for each square in matrix

Stages of Development	Number of Use Cases	Use Cases Defined	Requirements Documented	Prototype Developed	Prototype Validated	Production System Developed	Production System Validated	Production System Deployed	Production System Adopted
Database Types									
Information Standards	2 by Q2	2 by Q2	2 by Q2	2 by Q3	Q3	2 by Q3	2 by Q4	2 by Q4	2 by Q4
BIM	2 by Q2	2 by Q2	2 by Q2	2 by Q3	2 by Q3	2 by Q3	2 by Q4	2 by Q4	2 by Q4
Building Performance Database	2 by Q2	2 by Q2	2 by Q2	2 by Q3	2 by Q3	2 by Q3	2 by Q4	2 by Q4	2 by Q4
Regional Building Energy Database	2 by Q2	2 by Q2	2 by Q2	2 by Q3	2 by Q3	2 by Q3	2 by Q4	2 by Q4	2 by Q4
Energy Dashboards	2 by Q2	2 by Q2	2 by Q2	2 by Q3	2 by Q3	2 by Q3	2 by Q4	2 by Q4	2 by Q4

Task 4

Deliverable: 12/28/12

Task-Level Deliverable and Metrics

A prototype building operations platform that overlays on existing building control systems to enable cost effective (minimum 15% average annual return over 10 years) deployment of advanced sensor, control, diagnostic and decision-making technologies that have the potential to achieve up to 30 percent annual energy savings in applicable commercial buildings.

If changed, please insert most recent Task deliverable here:

Metrics: 12/28/12

		B101	B661	Buildi
4.1 Platform Completion	Percent completion of operations platform implementation, demonstration, and assessments for three buildings – (calculated using percent completion of key actions weighted according to effort)	25% complete by Q2	25% complete by Q2	25% com by Q
4.2 Energy Performance	HVAC energy savings relative to energy savings targets established for each of the three buildings	15% by Q2 Sample dates	15% by Q2	15% by

Task 5  
Deliverable: 12/28/12

Task-Level Deliverable and Metrics

Demonstration in at least five buildings of three different building system solutions that are capable of reducing annual energy use by 20 percent, drawing from integration of advanced HVAC, lighting, control, envelope and other technologies.

If changed, please insert most recent Task deliverable here:

Metrics: 12/28/12

5.1 Matrix Update      Percent complete for each square in matrix

Stages of Development	Screening	Preliminary Bldg Assesment	Detailed Bldg Assessment	Execute Retrofit	Post-retrofit analysis
Building					
Building 1	Q1	Q2	Q2	Q3	Q4
Building 2	Q1	Q2	Q2	Q3	Q4
Building 3	Q1	Q2	Q2	Q3	Q4
Building 4	Q1	Q2	Q2	Q3	Q4
Building 5	Q1	Q2	Q2	Q3	Q4
Building n					

Task 6	Task-Level Deliverable and Metrics			
Deliverable:	12/28/12	Ten market-based or behaviorally oriented strategies, tools, approaches, or programs delivered to public and private sector decision makers that could yield up to 30% annual energy savings in applicable commercial buildings.		
If changed, please insert task-level deliverable here:				
Metrics:	12/28/12			
6.1 Quantity of Content	Track, by phase of development (conceptual, draft, review, deploy), the number of subtask strategies, tools, studies, or other content that have at least a 50% likelihood of producing an output during the course of the budget period. Each of these efforts should be measured on the likelihood for achieving up to 30% energy reduction impact when delivered. A minimum of Z strategies completed by:			
	Conceptual	Draft	Review	Deploy
Subtask 1	Q1	Q2	Q3	Q4
Subtask 2	Q1	Q2	Q3	Q4
Subtask 3	Q1	Q2	Q3	Q4
Subtask 4	Q1	Q2	Q3	Q4
6.2 Content Delivery	Track the actual delivered outputs and how they are delivered, either in the form of papers/reports; workshops or content briefings, or through individual or small decision making group engagements.			
	Planned	In-Process	>50% Comp	Completed
Subtask 1	Q1	Q2	Q3	Q4
Subtask 2	Q1	Q2	Q3	Q4
Subtask 3	Q1	Q2	Q3	Q4
Subtask 4	Q1	Q2	Q3	Q4
6.3 Market Engagement	Track the interactions/frequency with targeted public or private decision makers, using the Hub’s Platforms as much as practical, under planned content to reach full engagement			
	Identified	Contacted	Preliminary	On-Going
Subtask 1	Q1	Q2	Q3	Q4
Subtask 2	Q1	Q2	Q3	Q4
Subtask 3	Q1	Q2	Q3	Q4
Subtask 4	Q1	Q2	Q3	Q4

Task 7

Deliverable:

12/28/12

Task-Level Deliverable and Metrics

National roadmap for curriculum, career planning, and program deployment to cultivate the skilled workforce needed for advanced energy retrofit of commercial buildings based on findings from field testing of an education and outreach program.

If changed, please insert most recent Task deliverable here:

Metrics:

01/09/13

7.1 Competency Gaps	Research and evaluation of courses for success in identifying critical competencies	Num
7.1.1	Number of Hub-generated courses/curricula evaluated	2
7.1.2	Number of Non-Hub courses/curricula evaluated	2
7.2 New Standards	Development of new coursework and standards (that fill competency gaps identified???)	
7.2.1	Number of nationally agreed upon job/competencies standards, in place at NIBS, that have been informed by the work of the Hub.	2
7.3 Market Engagement	Engagement with building educational stakeholders	
7.3.1	Number of national partners engaged	2
7.3.2	Number of educational delivery channels	2



Task 8

Deliverable:

12/28/12

Task-Level Deliverable and Metrics

Advanced energy retrofit investment practices demonstrated in 20 projects capable of achieving 30% annual energy savings and executed by integrated teams of large and small enterprises including minority and women owned firms.

If changed, please insert most recent Task deliverable here:

- Metrics:

01/09/13
- 8.1 Market Assessment

Evaluation of current financing conditions pre-Hub and post-Hub

8.1.1

Number of existing financing conditions established pre-Hub

8.1.2

Number of new financing conditions established or existing conditions modified since EEB Hub
- 8.2 Engagement

Adequate development pipeline of investment practices to achieve 30% or more annual energy savings in at least 20 building energy retrofits

8.2.1

Number of project identified

8.2.2

Number of projects completed

8.2.3

Measured percentage energy reduction

8.2.4

Number of businesses engaged in projects
- 8.3 Partnerships

Extent of stakeholder engagement to develop needed retrofit investment practices

8.3.1

Number of businesses advised

8.3.2

Number of consulting hours

8.3.3

Number of partnering relationships

8.3.4

Number of businesses convening events

8.3.5

Number of attendees at events

Task 9		Task-Level Deliverable and Metrics	
Deliverable:	12/28/12	Information exchange on EEB Hub content, research and tools with 500 stakeholders along the advanced energy retrofit value chain facilitating adoption of approaches to enable 20-50 percent energy reduction in commercial buildings through advanced energy retrofit.	
		If changed, please insert most recent Task deliverable here:	
Metrics:		01/09/13	
9.1 Impact Assessment		An impact assessment of 12 stakeholder engagements in BP3 (e.g., selected from platform events, workshops, and integrated solution showcases) to get in to 8 weeks after the event on how the event impacted thinking and actions.	
9.2 Stakeholder Reach		The number of independent external stakeholders engaged in platform events, workshops, integrated solutions showcases, and knowledge platformdownl compared to the target of 500.	

Task 10		Task-Level Deliverable and Metrics	
Deliverable:		<div>01/09/13 All required reports are submitted on-time to the DOE. To do this, the following activities must be completed:</div> <div><div>• Administrative guidelines and report templates are routed to task leaders at least three (3) weeks prior to submission to DOE</div><div>• Task leaders provide input for the reports no later than (NLT) the 10th of the month in which the reports are due. This permits compilation, editing and routing of draft reports for Operating Committee (OC) review</div><div>• OC review of the draft reports is complete NLT the 25th of the month that the reports are due. This provides times for final editing to ensure submission to DOE NLT than the 30th of each month</div></div>	
		If changed, please insert most recent Task deliverable here:	
Metrics:		01/09/13	
10.1 Web Reporting	Deployment of web-based reporting for all tasks		
10.2 On-Time Reporting	Percent of task leaders that provide input into SharePoint for quarterly report by the 10 <sup>th</sup> in the month it is due		